

MANUFACTURING APP PLATFORM (TULIP) & INDUSTRIAL IOT

AGILE WORKSTATION DIGITIZATION

MANUFACTURING APP PLATFORM TULIP & INDUSTRIAL
IoT,

AGILE SOLUTIONS FOR: VISUAL
WORK INSTRUCTIONS ACCELERATED
TRAINING PROCESSES

0-PAPER AUDITS & CONTROLS WITH CONNECTED TOOLS
MACHINE MONITORING & MAINTENANCE EASY
MONITORING OF PRODUCTION INDICATORS
DEPLOYMENT OF LEAN MANUFACTURING PRINCIPLES

www.smarterprod.com

Smarter Prod is a brand of ERM Automatismes



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contact@smarterprod.com



A screenshot of the Smarter Prod application interface. The main content area displays a task titled 'Rotor and Endcap Installation' with three numbered steps: 1. Place magnetic housing over rotor, making sure that the fan is in the non-magnetic side of the housing. 2. Place the endcaps on the housing, making sure the tabs are aligned as shown above. 3. Use 2 long screws + spacers to secure the endcaps, and screw into place using the torque gun. The interface includes a 'Help' button and a 'Count till sample: -1' indicator. On the right side, there is a dashboard with a 'Compressors Produced Today' counter showing '7862', a bar chart for 'Compressors Produced this month by associate', and a line chart for 'Average Stop Time by associate'. At the bottom right, it shows 'Product ID: Hello, Chris Rubov', 'Temp (C):', and a 'Process Time' of '6:57'.

**"A TEAM OF
ENGINEERS TO
SUPPORT YOU IN
INDUSTRY 4.0"**

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TRAINING & SUPPORT



What "Smart Industries" solutions can do for you

From reality

Critical manufacturing processes controlled with analog tools and reported in Word/Excel

Limited or no visibility of processes

Machine data not collected and not used optimization

No/few operator guidance and feedback

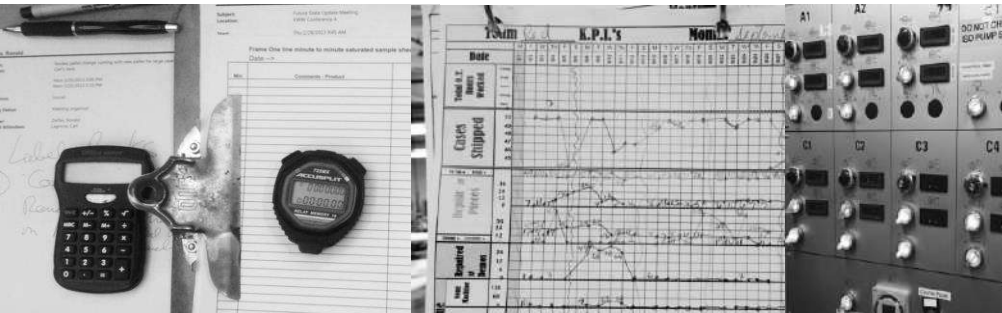
Data silos process optimization

Legacy software



To the promise Industry 4.0

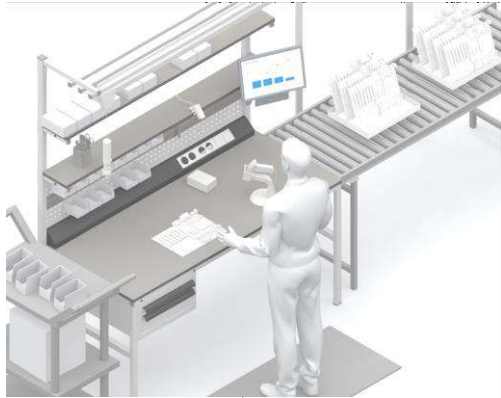
- Intelligent, connected machines and workstations
- Visibility and control all machines and workstations
- Plant digitization boosts technician productivity
- Technicians' contribution to continuous improvement
- Data interoperability and data-driven decision-making
- "Intelligence in the Cloud" as a solution to all production and maintenance problems



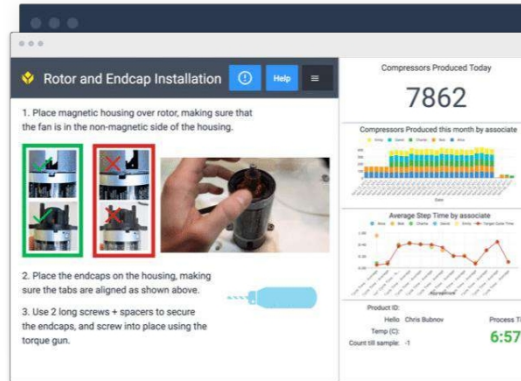
Digitalize workstations

Tulip is used to improve and optimize workstations with technicians.

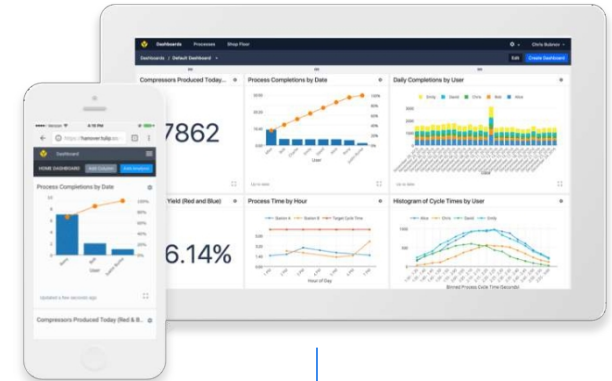
PROCESS FACTORY



CLOUD MANUFACTURING APP



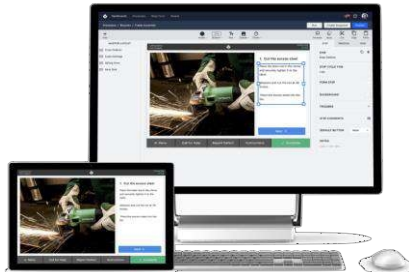
PRODUCTION DATA IN REAL TIME



PROCESS OPTIMIZATION

Tulip deploys easily and generates rapid ROI

TOOL FOR CREATING MANUFACTURING APP



SELF-SERVICE

Create and modify applications in-house without a single line of code



IOT DEPLOYMENT ON WORKSTATIONS



PLUG AND PLAY IOT

Easy connection of all machines and tools



DASHBOARDS ANALYTICS (BIG DATA)



VISION ON KEY-DATA

Measure and monitor key data through visual analysis



Tulip can be used a wide range of workshop/plant applications

VISUAL WORK INSTRUCTIONS



Guide operators using visual procedures instead of paper-based ones

TRAINING



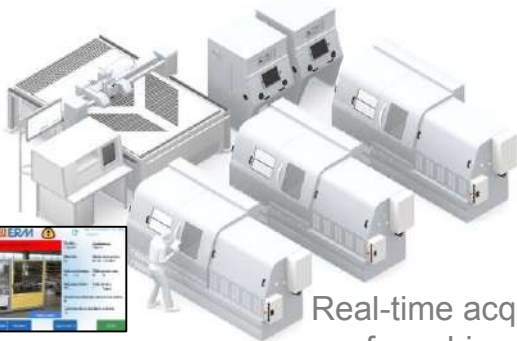
Simplify and continually improve training procedures

AUDIT & QUALITY



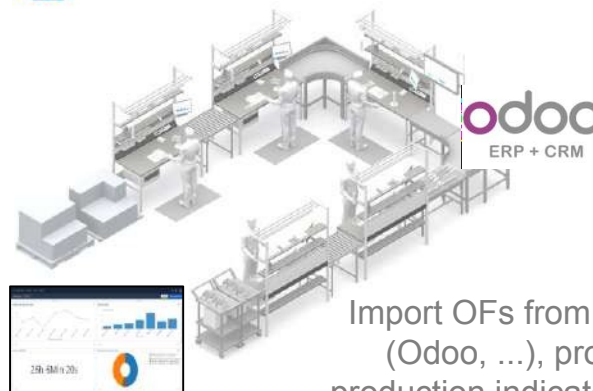
Replace paper forms with applications using IoT tools (cameras, scales, etc.)

MONITORING AND MAINTENANCE OF MACHINES



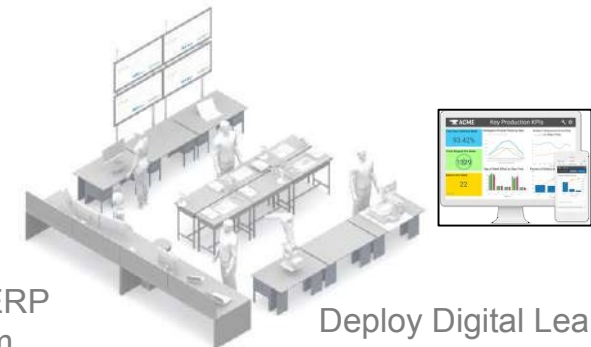
Real-time acquisition of machine data during production

TASK TRACKING AND VISIBILITY



Import OFs from an ERP (Odo, ...), program production indicators (TRS, MTBF, Productivity rate, ...) and display them on dashboards.

DIGITAL LEAN



Deploy Digital Lean tools and dashboards

Example: Jabil| 0-paper work instructions

GENERAL

- Income: \$20B
- Employees: 200,000
- HQ: St. Petersburg, FL
- Industry: CM
- Plants: 90+

CHALLENGE

- Low-volume, high-diversity production plant with "paper" work instructions
- Quality process on "paper" forms
- No visibility on process times

APPS



VISUAL WORK INSTRUCTIONS



AUDIT &



QUALITY TRAINING

SOLUTION

- Operators are guided by visual work instructions (Tulip application) on touch screens
- Production data is consolidated and visualized on a dashboard providing visibility on production indicators (KPIs).
- Process audits (5S...) are carried out on Tulip applications.



CONNECTED TOOLS



BARCODE SCANNER



CAMERA



TABLETS

RESULTS

defects

60%↓

Quality



10%

Production yield

4 Weeks

Return on investment

"Now we have a real-time vision that allows us to optimize even small production runs" - Quality Engineer

SOFTWARE
CONNECTED
TO _____

No

Industrialists, choose the right plan for your organization

Standard:

95 per station per month

Build powerful production applications.

Ideal for guiding operators through manual processes and collecting production data

- ✓ Unlimited applications
- ✓ No user limit
- ✓ Unlimited data analysis
- ✓ Connecting USB tools/sensors
- ✓ SQL and REST connectors

Professional:

195 per station per month

Build robust applications with IoT tools and sensors.

Ideal for combining manual workflows with data from sensors and IoT tools.

- ✓ Standard" features
- ✓ Industrial protocol support
- ✓ GPIO IoT connectivity
- ✓ Business Intelligence integration
- ✓ Machine monitoring module
- ✓ Additional "Dashboard stations

Company:

Let's talk

Build applications for large-scale deployment.

Ideal for multi-site deployments requiring integration with existing systems registration and control.

- ✓ Professional" features
- ✓ Advanced data governance
- ✓ Advanced security
- ✓ Advanced user management
- ✓ ERP and MES integration
- ✓ Local deployment option "On-premise
- ✓ GxP qualification (Medical & Pharmaceutical)



TULIP

Special offers for training centers→ Please contact us

Factory Kit: Everything you need to start digitizing your plant



12-month subscription to the Tulip SaaS platform



IIoT tools (code scanner bars, Pedal, Andon beacon, Temperature and humidity sensors, Beam break sensor)



Start for only:

**3500€
EXCL. TAX**



Tulip Footbridge I/O Gateway



Examples application



Tulip Light Kit



Training & Support

1

App Builder.

Build your production applications with the power IIoT and the Cloud.



2

Process IoT. Connect your sensors and tools with Tulip's I/O Gateway.



4

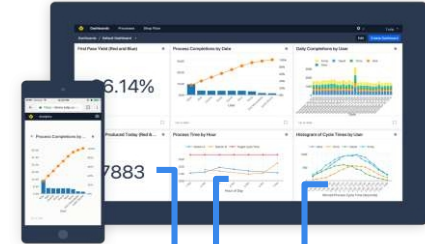
Professional Services.

Training, station deployment, interfacing with your ERP and expertise to help you build the most relevant use cases.

3

Analytical data.

Collect key data operators, tools and machines of your workshop/plant.



Tulip and Sick solutions make it easy to add and connect sensors and tools to machines and workstations to improve productivity and maintenance



Andon beacons



Barcode scanners



RFID transceivers



Cameras



Scales and load cells



Pedals



Buttons

The central graphic features the Tulip logo (a yellow stylized 'Y') and the SICK logo (blue 'SICK' text) with the tagline 'Sensor Intelligence.' Below the logos are images of a black Tulip sensor module and a blue SICK sensor module. A circular 'SMARTER PROD' logo is also present.



Safety sensors and protection (Laser scanners...)



Sensors for distance, position, proximity...



Pick-to-Light



Connected



screwdriver

s



Current



sensors



Connect your machines and workstations

(vibration,
acceleration,
etc.)

(level,
flow,
pressure,
temperatu
re, etc.)

For more information: www.smarterprod.com



Dimensional
measurements

TULIP for vocational training in Production Management & Maintenance

Tulip's main functions

Creation of digital work procedures

Machine PLC data

Communication with an ERP (Enterprise Resource Planning) system

Calculation and display of performance indicators (TRS, MTBF, etc.)

Digitization quality forms

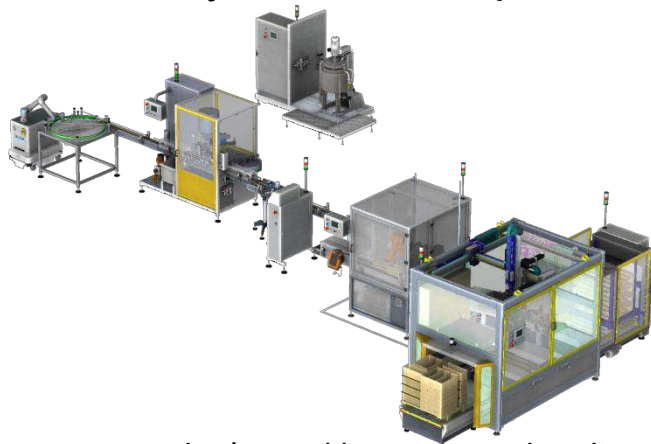
Digitization audit forms

Highlights

- Disposal of all paper documents
- Very easy to use
- Quick and easy application programming
- Mathematical calculations can be performed determine production indicators
- Visualization of all production-related data on a tablet or computer
- Operator self-training through procedures visual workstations
- Flexibility to modify applications and add steps as needed
- Dashboard customization: by machine or by production line or product,...
- Communication with remote machines via the Kepware communication server.
- Possibility of using devices connected to the workstations (scales, , camera, etc.)

Didactic production lines already available with Tulip

ERMAFLE X line



ERMASM ART line



You don't need have a complete line - you can use TULIP on a single workstation.

TULIP for vocational training in Production Management & Maintenance

Tulip references for professional training

UC50 : Tulip "MES", Digitalization of procedures, Machine monitoring, Communication with ERP, Key production indicators

- Application for digitizing work procedures, creating and monitoring production indicators in real time
- Application for monitoring data from machine PLCs during production (a "light" supervision application)
- Creation and follow-up of orders.
- Real-time calculation of production indicators such as TRS, MTBF, etc.
- Creation of dashboards to monitor production rates and display key production indicators for the production manager.
- A PC with a Kepware communication server (with 1-year maintenance contract)
- Tulip Pro software (3-year license included)
- A one-and-a-half-day training course on site or remotely

UC51: Digitization of procedures, key performance indicators production

- Application for digitizing work procedures
- Creation and monitoring of real-time production indicators in using data from machine controllers
 - Application for creating production orders
- A Windows go touchscreen tablet
- Kepware demo version limited to 2h continuous use. PC for Kepware server hosting not included
- Tulip Pro software (3-year license included)
- One-day on-site or remote training

UC52: Digitizing procedures

- Application for digitizing work procedures
- Application for creating production orders
- Production monitoring based on forms created in Tulip (machine stoppages, non-conforming parts)
- A Windows go touchscreen tablet
- Tulip Standard software (3-year license included)
- Half-day training on site or remotely

UC53: Tulip IoT Connected Assembly, Quality Control and Sampling

- Aluminium profile frame on castors with ergonomic workstation
- Touch screen with integrated PC
- Tulip I/O Gateway
- Tulip Light Kit (For Pick-to-Light)
- IIoT tools (barcode scanner, foot pedal, Andon beacon, temperature and humidity sensors, beam break sensor)
- USB electronic scale
- USB electronic caliper



- Tulip Pro software (3-year license included)
- Tulip quality control application model

Example 1: CFAI Bruz, Agro line| Product traceability

GENERAL

- First network private of technical and industrial training
- Employees: 700
- 33 Bac pro, BTS, DUT, licence and engineer diplomas

SOLUTION

- You can select OFs that have already been created at using Odoo ERP.
- Communication between Tulip and Odoo ERP for product traceability
- Operators are guided by visual work procedures (Tulip application) on touch-screen tablets.
- Production data for each machine is consolidated and visualized, providing visibility on production indicators (OEE, MTBF, etc.).
- Creation of dashboards based analyses to facilitate understanding of production events

CHALLENGE

Operate a food production line in "Enterprise" configuration, with:

- production orders
- traceability of trays produced
- visibility on production indicators



[Video of the robotized production line](#)

APPS



INSTRUCTIONS
VISUAL WORK



MACHINE MONITORING



JOB TRACKING AND
VISIBILITY

CONNECTED TOOLS



COMPUTERS



SCANNER OF
CODES-BARRES



TABLETS

SOFTWARE CONNECTED TO



SERVER
OPC - KEPLWARE



ERP - ODOO



Example 1: CFAI Bruz, Agro Line| Product traceability and OF launch

Main step importing an OF from ERP



Production order details

UIMM Sample Station Michelle
App_Ligne_Agro
Version de développement
Durée du processus: 80:59

Sélectionner un OF
Saisir un numéro d'OF
Lancer production Manuellement

Menu Besoin d'aide Envoyer message

UIMM Sample Station Michelle
App_Ligne_Agro
Version de développement
Durée du processus: 80:43

Ordre de Fabrication WH/MO/00001

Quantité à produire 15
Disponibilité assigned
Status done
Date de fab. planifié 2019-11-06 16:40:35

Priorité 1
Client null
Date de la commande null

Site
Virtual Locations/Production
Emplacement de matière première WH/Stock
Emplacements des produits finis WH/Stock

Avant de commencer

Matières premières nécessaire:
-Boite pour barquettes
-Barquette thermoformée rectangle 6 biscuits
-Biscuit rectangulaire

Numéro des lots à renseigner pour :

Menu Besoin d'aide Envoyer message Commencer

Real-time display of production indicators

UIMM Sample Station Michelle
App_Ligne_Agro
Version de développement
Durée du processus: 77:22

Pourcentage de non conformité 21,05%
Nombre de pièces non conformes 8
Progression de la production 38 / 150

Temp de production 00:03:39

Les types d'arrêts
Nombre d'arrêt par machine

Menu Besoin d'aide Qualifier un arrêt Rebut Production finie



SERVEUR OPC
keplware®

Example 2: CFAI Bruz, Ligne Méca| Digital work instructions

GENERAL

- First network private of technical and industrial training
- Employees: 700
- 33 Bac pro, BTS, DUT, licence and engineer diplomas

SOLUTION

- Production information can be entered manually for each machine using a tablet.
- Use of specific forms to facilitate production tracking and eliminate paper use
- Operators are guided step-by-step through machine set-up using digital work instructions.
- Production for each machine are easily entered by operators, enabling the calculation of various production indicators (OEE, MTBF, etc.).

CHALLENGE

Use a didactic key ring production line consisting of several unconnected machines:

- Production information
- Visibility on production indicators



APPS



VISUAL WORK INSTRUCTIONS



TRAINING



JOB TRACKING AND VISIBILITY

CONNECTED TOOLS



COMPUTERS



TABLETS

SOFTWARE CONNECTED TO

No



Example 2: CFAI Bruz, Ligne Méca| Digitizing tasks using forms

Production machine selection stage

The screenshot shows a mobile application interface for machine selection. At the top, there is a header with the UIMM logo, the text "Machine non affectée BE-ERM", and a yellow diamond icon. Below the header, there are six images of different industrial machines arranged in a 2x3 grid. At the bottom of the screen, there is a navigation bar with three buttons: "Menu", "Besoin d'aide", and "Lancer la production".

Declaration of machine stoppage

Enter production start-up details for KMR machine

The screenshot shows a mobile application form titled "Détails production KMR". The form contains several input fields and a submit button. The fields are:

- Nom du produit (*): Porte clé
- Quantité de porte clé à produire (doit être supérieure ou égale à 5): 0
- Heure début production (Respectez la forme 00.00) (*): 00.00
- Site de production (*): CfaI Bruz
- Date de production (*): 2020-01-22

At the bottom of the form, there is a navigation bar with three buttons: "Précédent", "Menu", and "Suivant".

Declaration of non-conforming or scrapped parts

Qualifier un arrêt KMR

Date 2020-01-28	Arrêt non connu Ecrire l'id
Heure (Respectez la forme 00.00) (*) 14.50	Photo Clear Retake
Type d'arrêt (*) Arrêt d'urgence	Information complémentaire sur l'arrêt (*) Un arrêt d'urgence dû à une collision du robot

Précédent

Menu

Suivant

Déclaration rebut KMR

Date (*) 2020-01-28	Quantité de pièces (doit être supérieure ou égale à 0) - 7 +
Heure (*) 5 : 22 Matin Après-midi	Photo Capture
Description (*) Couvercle non conforme	

Précédent

Menu

Suivant

Example 3: CFAI de l'Eure| Data acquisition on the ERMAFLEX line

GENERAL

- First network private of technical and industrial training
- Success rate: 83
- 300,000 investment in machinery, robots...
- 33 Bac pro, BTS, DUT, licence and engineer diplomas

SOLUTION

- Development an application for creating and saving production orders in Tulip tables.
- Operators are guided step-by-step through machine set-up using digital work instructions
- Acquisition of production data from machine PLCs using Kepware software
- Real-time display of production indicators (TRS, TRG, MTBF, etc.) using PLC data.

CHALLENGE

- A production line made up of several machines with paper production orders
- Production information is not exploited
- No visibility on production indicators



APPS



VISUAL WORK INSTRUCTIONS



TRAINING



MACHINE MONITORING

CONNECTED TOOLS



COMPUTERS



TABLETS



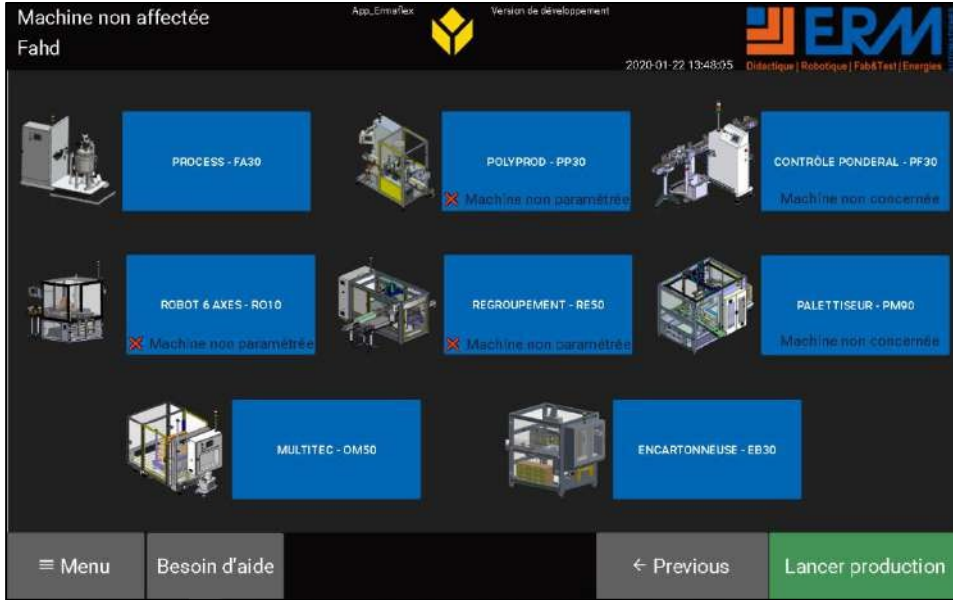
SOFTWARE CONNECTED TO



SERVER
OPC - KEYPWARE

Example 3: CFAI de l'Eure| Digital work instructions

Step Choice of machine to configure



Step Configuration of production parameters

Step Start configuration product format



Step Product format changeover settings



POLYPROD



Ordre de fabrication

Paramétrage

1

Sortir



Recette : 0000

Fonctionnement

Contenant : Pots 1

Auto. / P. à P.

Produit : Pots

Liquide Flacons 2

Volume dose : 10 ml

Réglage à faire sur la pompe : 000 %

Réglage offset: +00

Granulé

Tours de vis : 1 tours

1. Ensuite, appuyez sur la petite flèche du champ "contenant".

2. Choisissez : pot

N° OF : 001

Nom du client : ERM

Nombre de contenants : 4

Nombre de cartons : 8

Type de contenants : carton

Type de produit : pot

Menu

Besoin d'aide

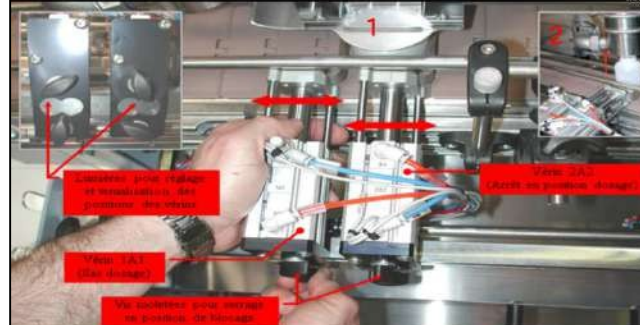
Précédent

Suivant

Sortir



Ordre de fabrication



N° OF : 001

Nom du client : ERM

Nombre de contenants : 4

Nombre de cartons : 8

Type de contenants : carton

Type de produit : pot

Positionnez les vérins 1A1 et 2A2 au poste de dosage souhaité : poste de dosage produits solides '1' ou poste de dosage produits liquides '2'

Menu

Besoin d'aide

Précédent

Suivant

Sortir

Example 4: CFAI d'Istres| Monitoring and data acquisition on the ERMAFLEX line

GENERAL

- First network private of training network technical and industrial
- Success rate: 86
- 23 Bac pro, BTS, DUT, licence and engineer diplomas

SOLUTION

- Connection of individual machines to each other, to Tulip and to ERP using Kepware communication software
- Real-time acquisition of production data from ERP (OF) and machine PLCs
- Development of a real-time machine monitoring application for all machines on the production line, enabling remote control of the line.
- Real-time calculation of production indicators, by machine and sector, and display on Tulip dashboards

CHALLENGE

- A production line in a workshop with more than 5 machines
- The person in charge must be on hand to see what's happening on the line.
- Production information is simply displayed on the consoles of the machines in question.

APPS



VISUAL WORK INSTRUCTIONS



TRAINING



MACHINE MONITORING

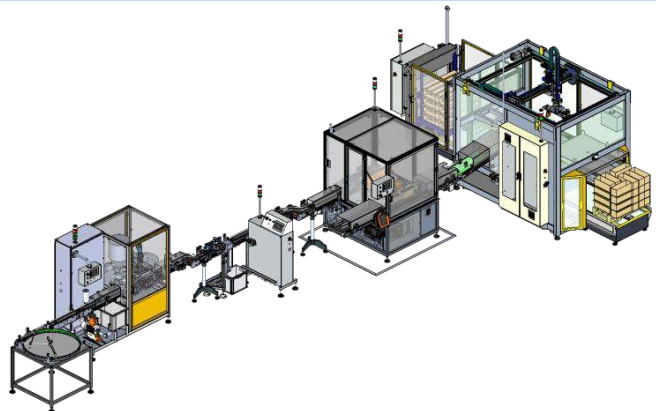
CONNECTED TOOLS



COMPUTERS



TABLETS



SOFTWARE CONNECTED TO



SERVER OPC - KEPWARE



ERP-ODOO



Example 4: CFAI Istres| Data acquisition screens for the ERMAFLEX line

Main machine monitoring screen

Machine non affectée
Fahd

ERM

App_surveillance_Ermaflex
Version de développement

Robot 6 axes (RO10)
MACHINE NON RACCORDEE

PolyProd (PP30)

Liquide	Pot
Recette :	0 / 25
Volume dosage :	15 ml
Réglage pompe :	43 %
Réglage offset : 0	
Tour de vis : 1 Tours	

Menu Besoin d'aide Verrines



SERVEUR OPC
keeware®

Production parameters screen for the selected machine

Machine non affectée
Fahd

ERM

App_surveillance_Ermaflex
Version de développement

Défaut comptage dosage solide

Produit : Contenant :
Liquide Pot

Recette : Mode de marche :
25 Mode sans vissage

Volume dosage : Réglage pompe :
15 ml 43 %

Réglage offset : Tour de vis :
0 1 Tours

Quantité produite par rapport à la recette :
0

Cadence de la production (min) :
0

ERM
automatismes industriels

Visualisation

Menu Besoin d'aide Verrines Page Suivante → Sortir

List of machines

Tableau de bord Processus Ateliers Personnes

Machine Library

MACHINE NAME	MACHINE DATA SOURCE	STATION	LAST OUTPUT
Ancienne_machline	OPC_CFAI_Bruz ONLINE	None	76 days ago
PolyProd PP30	OPC_Ermaflex ONLINE	None	19 hours ago
Regroupement RES0	OPC_Ermaflex ONLINE	None	Never
Robot 6 axes RD10	OPC_Ermaflex ONLINE	None	Just now
Simulator	ViJayaKepWare ONLINE	None	Never
Test_Joshua	OPC_CFAI_Bruz ONLINE	None	76 days ago
machine test	OPC_Ermaflex ONLINE	None	Just now